Two New Species of *Calceolaria* (Scrophulariaceae) from the Tropical Andes

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ABSTRACT. Two new species of *Calceolaria* L. (Scrophulariaceae) from the tropical Andes are described: *Calceolaria rhombifolia* Molau from northern Peru and *C. urticifolia* Molau from northern Bolivia, belonging to the sections *Rotundifoliae* and *Urticopsis*, respectively, within subgenus *Calceolaria*. This paper is the first addendum to the 1988 monograph in *Flora Neotropica*.

RESUMEN. Se describen dos nuevas especies de *Calceolaria* L. (Scrophulariaceae) de los Andes tropicales: *Calceolaria rhombifolia* Molau del norte de Perú y *C. urticifolia* Molau del norte de Bolivia. Pertenecen a las secciones *Rotundifoliae* y *Urticopsis*, respectivamente, dentro del subgénero *Calceolaria*. Este artículo es la primera adenda a la monografía de *Flora Neotropica* de 1988.

Key words: Bolivia, *Calceolaria*, Peru, Scrophulariaceae.

Calceolaria L. (Scrophulariaceae) is a Latin American genus of approximately 250 species ranging from Mexico to Tierra del Fuego. In the most recent monograph of the Neotropical representatives of the genus (Molau, 1988), 183 species were recognized in the Neotropical part of its distribution area. With the present circumscription, the genus comprises 3 subgenera and 22 sections (Molau, 1988). Nearly all of the Neotropical species belong to the subgenus *Calceolaria*, whereas the vast majority of the southern temperate species belong to the subgenera *Cheiloncos* and *Rosula*.

Since the 1988 monograph, a lot of new *Calceolaria* collections from the Neotropics have accumulated. However, most of these are from previously relatively well-known parts of the Andes, and only little among the accessions has so far called for an update of the monograph. There are huge "white spots" in the tropical Andes still awaiting primary botanical exploration, and it is symptomatic that only the collections of field parties working in remote and poorly explored areas have brought in *Calceolaria* collections that add to our knowledge of the genus. Most important of these are the groups of Isidoro Sánchez Vega and collaborators (Cajamarca) and Abundio Sagástegui A. et al. (Trujillo) operating in northern Peru, and Stephan Beck et al. (La Paz) undertaking fieldwork in northern Bolivia. In addition, the fieldwork of the late David N. Smith from many remote parts of the Peruvian Andes has yielded an important set of *Calceolaria* specimens, in some cases the first modern collections of species that were previously known only from the type collection. The collecting activity of the above-mentioned parties has provided material that now calls for taxonomic recognition. The two species described here are the first addendum to the 1988 monograph; both belong to subgenus *Calceolaria*.

Calceolaria rhombifolia Molau, sp. nov. TYPE: Peru. Cajamarca: Chota, El Agua Fría along the road from Chota to La Paccha, remnants of primary mountain scrub, 2400 m, 20 July 1993, *J. Cabanillas Soriano 734* (holotype, F). Figure 1A–C.

Suffrutex 0.5–1 m altus; caule distaliter puberula. Folia decussata; petiolo puberulo, 7–10 mm longo; lamina ovata vel rhombica, 2.3–6.7 × 1.3–3.8 cm, acuta, basi cuneata, margine grosse serrato. Inflorescentia puberula, terminalis, ex cymis 18- ad 50-floris una vel duabus constans; pedunculo primario 3.0–6.7 cm longo; pedicellis 1.0–1.4 cm longis; bracteis carentibus. Flos sepalis viridibus, triangularibus, 2.5–3.0 × 1.8–2.5 mm sub anthesi, acutis vel subacutis, puberulis, margine integro, corolla vivide flava, immaculata, labio inferiore 8–12 × 6–9 mm, parte saccata distaliter recurvata, elaeophoro munita; antheris bubalinis, 1.4–1.8 mm longis, omnino dehiscentibus, thecis ± aequalibus, divaricatis; stylo arcuato, 1.5–2.0 mm longo. Capsula conica, leviter acuminata, 4–6 mm longa, glanduloso-puberula.

Subshrub, 0.5–1 m tall; inflorescence and distal parts of stems puberulous. Leaves decussate, petiolate; blades ovate to almost rhombic, 2.3–6.7 × 1.3–3.8 cm, acute, cuneate at base, the margins coarsely serrate; upper surface deep green, puberulous; lower surface pale green, reticulate-venose, glabrous or puberulous; petioles puberulous, 7–10 mm long. Inflorescence distal, composed of 1 or 2 pairs of 18- to 50-flowered cymes, the primary pe-

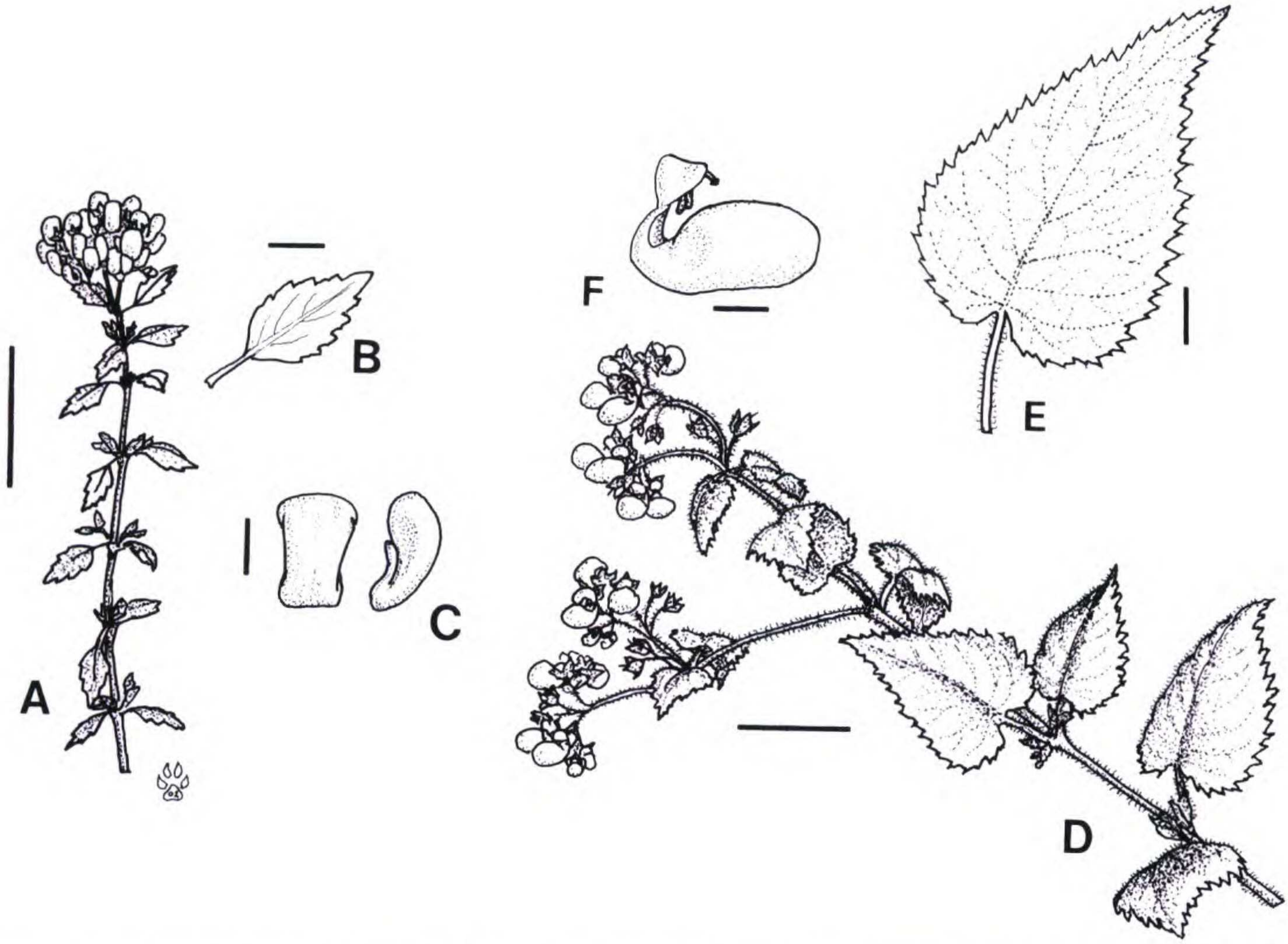

Figure 1. A–C. *Calceolaria rhombifolia* Molau (*Sagástegui et al. 8212*). —A. Flowering shoot. —B. Leaf. —C. Corolla (ventral and lateral view). D–F. *Calceolaria urticifolia* Molau (*Salinas 3276*). —D. Flowering shoot. —E. Leaf. —F. Corolla. Scale bars: A, D = 5 cm; B, E = 1 cm; C, F = 5 mm. Drawn by the author from herbarium material.

duncles 3.0–6.7 cm; pedicels 1.0–1.4 cm; cyme bracts absent. Sepals green, entire, triangular, 2.5–3.0 × 1.8–2.5 mm at anthesis, acute or subacute, puberulous. Corolla bright yellow, unspotted, minutely puberulous; upper lip arched, 2–3 × 4–5 mm; lower lip strongly upcurved, saccate in 50–60% of length, the upcurved portion 8–12 × 6–9 mm; eliophore present. Stamens buff; anthers dehiscing throughout, 1.4–1.8 mm, the thecae divaricate; filaments ca. 1.0 mm. Style arcuate, 1.5–2.0 mm. Capsule conical, slightly acuminate, 4–6 mm long, glandular-puberulous.

Distribution and habitat. Endemic to a small area in northern Peru, within or just south of the Huancabamba Deflection (cf. Molau, 1988), known from the southern part of Dept. Piura and adjacent parts of northern Cajamarca; mountain scrub, the altitudinal records ranging from 2300 to 2400 m. The paratypes cited below were collected within the lower portion of the Andes known as the Huancabamba Deflection, but on hills south of the division line following the bottom of the valley across the cordillera.

Leaf morphology and indumentum indicate that *Calceolaria rhombifolia* belongs to *Calceolaria* sect. *Rotundifoliae* (Molau, 1988), which now encompasses three species, all in northern Peru. It is most closely related to *C. rotundifolia* HBK, restricted to a small area north of the Huancabamba Deflection. The presence of this new taxon was anticipated in the monograph (Molau, 1988) because of some aberrant specimens from south of the Divide, even though the material did not suffice for taxonomic recognition at that time. The addition of the informative and well-preserved collection now selected as the type for *C. rhombifolia* completed the picture.

Calceolaria rhombifolia is easily distinguished from its northern sister species *C. rotundifolia* by the shape of the leaf blades (whence names). In addition, the leaf blades of *C. rhombifolia* are much larger than in *C. rotundifolia* (with leaves 0.9–1.7 cm long), they are cuneate at base (not cordate), and the margins are distinctly coarse-serrate, not lobate as in *C. rotundifolia*.

Paratypes. PERU. **Piura:** Huancabamba, summit be-

tween Schucumayo (= Shumayo) and Tabaconas, SE of Sondor, Nov. 1868, *A. Raimondi 639* (USM); Cerro La Viuda, Sondor district, 2300 m, 21 July 1975, *A. Sagástegui et al. 8212* (GB, HUT, MO).

Calceolaria urticifolia Molau, sp. nov. TYPE: Bolivia. La Paz: Inquisivi, 9 km from Choquetanga, canyon of the Río Calachaca–Jahura, 16°48'S, 67°19'W, 3400 m, remnants of mountain scrub in pastured landscape, 3400 m, 20 July 1994, *N. Salinas 3276* (holotype, GB; isotype, LPB). Figure 1D–F.

Suffrutex laxus, caule usque ad 2 m longo, distaliter glanduloso-villoso trichomatibus brunneolis. Folia decussata; petiolo dense glanduloso-villoso, 1.6–3.7 cm longo; lamina herbacea, ovata vel cordiformi, 5.5–10 × 4.8–7.4 cm, acuminata, basi cordata, margine acute serrato vel biserrato, supra olivacea, glanduloso-villosa, infra pallide olivacea, reticulato-venosa, pilosa. Inflorescentia puberula, terminalis, ex cymis 10- ad 26-floris una vel duabus constans; pedunculo primario 4.5–9.2 cm longo; pedicellis 1.3–2.2 cm longis; bracteis carentibus. Flos sepalis viridibus, ovatis, 5.0–6.0 × 3.2–4.0 mm sub anthesi, acutis vel leviter acuminatis, extra glanduloso-villosis, intra glabris, margine integro; corolla vivide flava, probabiliter immaculata, labio superiore 3–5 × 5–7 mm, inferiore procurrente, 14–17 × 11–15 mm, elaeophoro munita; antheris fulvis, 2.3–3.0 mm, omnino dehiscentibus; thecis ± aequalibus, divaricatis; stylo 1.9–2.5 mm longo. Capsula ovoidea, 5–7 mm longa, breviter glanduloso-hirsuta; seminibus ca. 0.3 mm longis.

Lax subshrub, the stems up to 2 m long; inflorescence and distal parts of stems glandular-villous with brown-tinged hairs. Leaves decussate, petiolate; blades herbaceous, ovate to cordiform, 5.5–10 × 4.8–7.4 cm, acuminate, cordate at base, the margins sharply serrate or biserrate; upper surface olive green, glandular-villous (becoming glandular-pilose with age); lower surface pale green, reticulate-venose, pilose; petioles densely glandular-villous, 1.6–3.7 cm long. Inflorescence distal, composed of 1 or 2 pairs of 10- to 26-flowered cymes, the primary peduncles 4.5–9.2 cm; pedicels 1.3–2.2 cm; cyme bracts present. Sepals green, ovate, entire, 5.0–6.0 × 3.2–4.0 mm at anthesis, acute or slightly acuminate, externally glandular villous, internally glabrous. Corolla bright yellow, probably unspotted, minutely puberulous; upper lip hooded, 3–5 × 5–7 mm; lower lip projecting, 14–17 × 11–15 mm, saccate in 55–65% of length; eliophore present. Stamens yellow brown, anthers 2.3–3.0 mm, dehiscing throughout, the thecae divaricate; filaments 0.7–1.0 mm. Style glabrous, 1.9–2.5 mm, curved at apex. Capsule ovoid, 5–7 mm long, shortly glandular-hirsute. Seeds ca. 0.3 mm long.

Distribution and habitat. Endemic to the eastern slopes of the Andes in northern Bolivia (Dept. La Paz); mountain scrub and upper cloud forest, known from altitudes between 2800 and 3400 m.

Calceolaria urticifolia was found in a botanically poorly explored area of the Andes during community studies in plant ecology by botanists from the university of La Paz. With regard to vegetative as well as floral morphology, it is a typical representative of *Calceolaria* sect. *Urticopsis*, a large species group in the northern and central Andes (see Molau, 1988). However, it differs from most species of section *Urticopsis* by its more or less brown-tinged and glanduliferous vestiture, reminiscent of *Calceolaria* sect. *Lehmannina*. In the latter, there is one species with ovate leaf blades with cordate bases, *Calceolaria heterophylla* Ruiz & Pavón (sect. *Lehmannina*), endemic to the Andes of central Peru. However, *C. heterophylla* possesses the typical calyx of section *Lehmannina*, the sepals having a short-tomentose border along the margin inside.

Another species co-occurring with *Calceolaria urticifolia* in the eastern slopes of the north Bolivian Andes is *Calceolaria soratensis* Kraenzlin (sect. *Polyclada*). They agree in general leaf shape, but *C. soratensis* possesses the key characters of section *Polyclada*, viz. unequal sepals with their typical short-tomentose internal border and sessile orange glands on the lower leaf surface. Furthermore, the leaf blades of that species have a white villous lower surface and deflexed margins with rounded teeth, and the cymes are only 1- to 4-flowered.

Within *Calceolaria* sect. *Urticopsis*, the closest relative to this new species is probably *Calceolaria elatior* Grisebach, which has its main distribution in southern Bolivia and northern Argentina. This species differs in many characters, e.g., its white indumentum and absence of cyme bracts.

Paratypes. BOLIVIA. **La Paz:** Inquisivi, Choquetanga Chico, descending toward Humapalca, 2800 m, 19 Aug. 1994, *N. Salinas et al. 3387* (GB, LPB).

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Literature Cited

Molau, U. 1988. Scrophulariaceae—Part I. Calceolarieae. Flora Neotropica, Vol. 47. New York Botanical Garden, Bronx.